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ABSTRACT

A review of literature relevant to equal educational opportunity is presented in order to support an argument for the use of normative models in educational research. The literature review shows that confusion over the 1966 Coleman Report was due to a mismatch between the implied reform objective of the report and its statistical approach. The objective was to reduce differences in educational achievement between blacks and whites, but the statistics explained individual rather than group differences in achievement. In response to this research dilemma, a normative dynamic model of the objectives of school integration over time is developed and applied. A normative objective model has theoretical significance because it can be used in conjunction with behavioral data to operationalize concepts such as accountability, symbolic politics and non-decisions. (Author/MK)

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TOWARD A NORMATIVE DYNAMIC MODEL OF EDUCATIONAL EQUITY

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ABSTRACT

TOWARD A NORMATIVE DYNAMIC
MODEL OF EDUCATIONAL EQUITY

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A selective review of the literature on equal educational opportunity supports an argument for explicit use of normative models in research. The argument has two parts. First, we show that confusion over the Coleman Report (1966) was due to a mismatch between the implied reform objective and the statistical approach. The objective was to reduce black/white differences in educational achievement, but the statistics explained individual differences in achievement. Second, we partly develop and apply a normative dynamic model of the objectives of school integration over time. Normative dynamic models have theoretical significance because they can be used in conjunction with behavioral data to operationalize concepts such as accountability, symbolic politics and non-decisions.

Introduction

A compelling argument for explicit use of normative frameworks can be made from criticisms of empirical research on public policies. Authors in Storing (1962) noted early that behavioralist claims to objectivity were overstated, because raw data have to be evaluated within a non-empirical framework that indicates whether a given relationship or finding is large or small, functional or dysfunctional. Other critics have argued that empirical studies tend to endorse the status-quo because they do not deal with alternatives to observed relationships (Walker, 1966). More generally, social scientists are criticized for failing to make values explicit in their research (Meehan, 1973).

The first section of this article illustrates the problems noted by these critics with a discussion of the Coleman Report (1966). We emphasize that the contrasting findings of between-race and within-race studies result from differences in normative/mathematical frameworks, not from differences in data or raw statistics such as means, standard deviations, or regression

coefficients. Indeed, the contrasting findings (presented in Tables I and II below) are reportedly generated by the same regression equations. One of the most disturbing features of the Coleman Report episode is the failure of extensive peer review to link the Report's counter-intuitive findings to a mismatch between reforms under consideration and the statistical framework used in the analysis.

The second section of the article partially develops and applies a normative, dynamic model of reform expectations for integration. The model is intended to operationalize political constraints and the effects of desegregation on social relationships over time. Such a model should have practical applications in policy analysis, program evaluation and implementation. From a theoretical perspective, the normative model could be used with behavioral data to operationalize Edelman's (1971;1977) concept of symbolic politics and Bachrach and Baretz's (1962;1963) concept of non-decisions. Also, because the reform model predicts changes in the rules of the game governing "who gets what" as these are reflected in regression coefficients, it does not have the conservative implications that are often attributed to strictly empirical analyses of equity issues (Aaron, 1978, p. 98). Finally, extension of normative dynamic modeling into other major policy areas is relevant to operationalizing V.O. Key's theory of critical elections. If public preferences imply a course of action (captured in the model) that is not compatible with observed public sector behavior over time, then a critical election or more profound political upheaval may result.

The following symbols will be used thoughout:

A = Achievement as measured by conventional tests;

S = School characteristics of all kinds;

C = Class or social background;

M = Merit or genuine talent;

p = Regression coefficients for the black population;

q = Regression coefficients for the white population;

Subscripts in addition to variables above are b = black, w = white, i = individual, t = time.

The Coleman Episode, or What was the Question?

Three normative perspectives on educational equity are especially useful in understanding the debates generated by the study of equal educational opportunity conducted by Coleman (1966) and his colleagues. These are the objectives of (1) equality of schools for blacks and whites, (2) equality of average achievement for blacks and whites and (3) equality of individual achievement. Each of these objectives is defined statistically and graphically in this section.

We show that the confusion generated by the Coleman study stems from the fact that is was widely thought to address the first two policy objectives, but actually addressed the first and third. In context of concern over eliminating between-race differences in achievement, explanations of within-race differences ran contrary to the conventional wisdom about the importance and effects of schools, because explanations of between-race and individual (within-race) differences are not the same.

It must be stressed again, that contrasts in the explanations of between-race and within-race differences in achievement do not reflect different findings of fact. The data, variance, variables and form of the equation can all be held constant, while explanations diverge, due to the mathematical frameworks that are used to interpret the raw statistics. These mathematical frameworks, in turn, reflect contrasting assumptions, values, and policy interests.

Equal Schools for Blacks and Whites

The normative goal is to eliminate past and present manifestations of discrimination so that minority schools will be equal in quality to schools for the majority. Some variance in school quality is expected within each race, but the reform goal requires that on the average schools be equal. The end result should be $\bar{S}_w = \bar{S}_b$ for the various S_1, S_2,... S_n that are significant indicators of school quality. Graphically, the problem and reform statements are:

INSERT FIGURE I

There are at least two views on what constitutes school equality. In breaking with the tradition of "separate but equal" schools, the 1954 Brown decision established the principal that segregated schools are "inherently" unequal. From this perspective, Coleman's study found extensive school inequality — that is segregation. Most American school children were in schools where children of their own color constituted a large proportion of the student body (National Institute of Education, 1976, pp. 23-4).

On the other hand, to the surprise of Coleman and others, the data showed that school spending and the material qualities of the schools attended by blacks and whites were quite similar. Mosteller and Moynihan (1972. p. 11) say:

> ...the nation had, within geographic regions, come close to supplying equal, though largely separate, facilities to Negroes and whites according to the classical notion of traditional physical inputs. Insofar as that is true, the country, having chosen a goal in a social problem had come close to reaching it.

Equal Achievement for Blacks and Whites

The "Coleman Report" (1966) is also credited with changing the operational definition of "equal educational opportunity." Before the report, the objective "was measured in terms of school inputs, including racial mixture," after the report "it became increasingly the practice, even the demand, that

equality be measured by school outputs; that is to say, by results of tests of academic achievement" (Mosteller and Moynihan, 1972, p.6). In the words of analysts for the National Institute of Education (1976, pp. 5-6), "Better educational opportunities for blacks became associated with closing the educational achievement gap between blacks and whites." The graphic statement of the equal average achievement objective is the same as for the equal school objective, but the variable is achievement, and the equity goal is $\bar{A}_w = \bar{A}_b$ or more realistically, given constraints, to minimize the difference in average attainment — Min $(\bar{A}_w - \bar{A}_b)$.

FIGURE II ABOUT HERE

Coleman's (1972, pp. 153-5) original analysis plan was to explain lower achievement levels for blacks using equations that related achievement to race-linked differences in school characteristics, controlling for other factors. Regression coefficients in an equation which related A to indicators of S for the black population could then be used as weights to estimate the effects on black achievement of replacing the "levels of input resources for the average black in the region with those of the white in the same region," while holding C (home background) at black averages. This analysis produces two types of findings. First, it provides a measure of "effective inequality of opportunity": the average gain in black achievement resulting from exposure to all school inputs enjoyed by whites. Second, by selectively changing some school variables while keeping others at average levels, school equalization policies that are expected to raise black achievement most rapidly can be identified.

Operationally, then, the measure of unequal opportunity due to race-linked school differences would be $\hat{\bar{A}}_{b,t+n} - \bar{A}_{b,t}$ where $\hat{\bar{A}}_{b,t+n}$ is the estimated achievement of blacks after a completed reform (t+n) that exposes them to the

school advantages enjoyed by the average white. The proposed measure of effective inequality of opportunity is equal to the sum of the products of the school variable regression coefficients ($p_{as.c}$) in the black equation times average black/white differences in school charateristics:

$$\hat{\bar{A}}_{b,t+n} - \bar{A}_{b,t} = \sum_{s=1}^{\hat{s}} p_{as.c}(\bar{S}_{w,t} - \bar{S}_{b,t}).$$

Also, the $p_{as.c}(\bar{S}_w - \bar{S}_b)$s that make the largest contribution in explaining effective inequality of opportunity would be the key targets for equalization.

Coleman (1972, p.155) did not carry out the analysis as planned. McPartland and Sprehe (1973) did execute Coleman's original concept using the same data and variables that were used in the major regessions of the 1966 Report. Consistent with our formulation of the objective to minimize the difference between average black and white achievement (which is somewhat broader than Coleman's objective) impacts are calculated for both races. Thus in addition to the equations estimating potential gains for the average black illustrated above, equations estimate potential losses to the average white from exposure to conditions faced by the average black

$$\hat{\bar{A}}_{w,t+n} - \bar{A}_{w,t} = \sum_{s=1}^{\hat{s}} q_{as.c}(\bar{S}_{w,t} - \bar{S}_{b,t}).$$

Results of the McPartland and Sprehe (1973, p.323) reanalysis are presented below in terms of standardized units of achievement. Figures in the body of the table predict changes in achievement that would result from black exposure to school characteristics experienced by the average white in the same region, and from white exposure to schools experienced by the average black.

TABLE I HERE

The data show that school inequalities are important in explaining the average achievement gap between blacks and whites. Predicted changes in achievement resulting from removal of school quality inequities are greatest for whites in the early grades. For example, the .61 loss of a standard unit of

achievement predicted for 6th grade Southern whites from an exchange of schools with Southern blacks explains 57% of the gap in racial achievement in that region and grade.[1] Had whites gone to the "separate but equal" schools of blacks in the mid-1960s, the estimates say that they would have been less than half as far ahead of blacks as they actually were. The table also tells us that the white advantage in achievement is largely attributable to differences in teacher characteristics.

Another striking feature of the estimates is the contrast between the sensitivity of whites and blacks to school characteristics. Whites are more sensitive to changes. In contrast to the 57 percent largest loss for whites, the largest gain in predicted achievement for blacks receiving white school inputs is .33 of a standard unit, or only 24% of the 12th grade racial achievement gap in the South. Because the absolute difference in inputs, $|\bar{S}_w - \bar{S}_b|$, is the same in estimates for both blacks and whites, this contrast in sensitivity must result from differences in regression coefficients relating school variables to achievement in the two equations (generally $p_{as.c} < q_{as.c}$).*

In contrast to McPartland and Sprehe (1973), who explained average differences in achievement between the races in terms of average differences in school quality, Coleman's (1966) report explained individual differences in achievement in terms of individual exposure to school and home advantages. The normative political perspective that corresponds most closely to the Coleman analytic approach is, as we shall see in the next section, the equalization of individual differences in achievement. The large discrepancies in the findings from the between-race and individual modes of analysis is evident when a summary table prepared by Coleman (1972, p. 160) is compared with the table above. Figures in the cells of Table II are measures of the unique contribution of

*Differences are larger than they appear to be because the sum of the products is standardized and, for all but the 12th grade Northern sample, the standard duration of achievement is larger for whites than for blacks.

school factors and family factors to variance in individual achievement.

TABLE II HERE

Although variables and equations for the two tables are the reportedly the same (McPartland and Sprehe, p. 32[illegible]; Coleman, p. 160), the explanation of achievement provided in Table II contrasts with that in Table I. Table II indicates that school characteristics explain very little of the variance in achievement, and that teachers do not stand out as more effective influences on achievement than other school factors. Also, while schools are of minor importance in explaining variation in achievement for both racial groups, school effects are greater for blacks than for whites. Thus blacks appear to be more sensitive to school variables, as Coleman (1966, p. 317) reported.

If the raw findings — regression coefficients, means, standard deviations — behind the two tables are the same, what accounts for the different explanations of achievement? As noted above, the tables provide answers to two different questions. The McPartland and Sprehe analysis asks and answers questions about the causes of achievement differences between the races. The Coleman analysis asks and answers questions about individual achievement differences within the races. Both studies address a common total distribution of individual differences, but the first focuses on the relatively small between-race portion of that distribution and the second focuses on the relatively large within-race portion.

Although the studies are logically and statistically compatible, the reader, who was not aware of the policy questions embedded in the mathematical frameworks, might think that both analyses attempted to explain achievement in an absolute sense. If so, the reader would conclude that scientists had come up with conflicting findings about the causes of achievement. Specifically, it appears that one study found that schools had substantial effects, while the

other found they had inconsequential effects; one study found that schools were more important for whites, while the other found schools more important for blacks; and one study found that teacher quality was the most important school factor for whites, while the other found other school factors equally important.

Equal Achievement for Individuals

A little over five years after Coleman redefined equal educational opportunity, Christopher Jencks and his colleagues (1972) tried to convince readers to accept yet another substitute for equalizing schools. The authors, who must be credited for supplying explicit linkages between values and statistical methods, warn readers that they are not addressing the widely-accepted, between-race objective (Jencks, 1972, p. 14).

> The reader should also be warned that we are primarily concerned with inequality between individuals, not inequality between groups. This accounts for much of the discrepancy between our conclusions and those of others who have examined the same data. There is always far more inequality between individuals than between groups. It follows that when we compare the degree of inequality between groups to the degree of inequality between individuals, inequality between groups often seems relatively unimportant. It seems quite shocking, for example, that white workers earn 50 percent more than black workers. But we are even more disturbed by the fact that the best-paid fifth of all white workers earns 600 percent more than the worst-paid fifth. From this viewpoint, racial inequality looks almost insignificant.

Stated statistically, the objective of equalizing individual differences in achievement is to minimize the variance or average sum of the squares of individual achievement around the mean: $\text{Min} \sum (A_i - \bar{A}_i)^2/N$ or $\text{Min} \sigma_i^2$. This has the property of placing priority on eliminating the "extremes of wealth and

poverty", which is Jencks' (1972, p. 14) political objective. Graphically, the reform objective ($\sigma^2_{i,t+n} < \sigma^2_{i,t}$) is illustrated in Figure III.

FIGURE III ABOUT HERE

Although Coleman (1966) did not embrace elimination of individual differences in achievement as his policy objective, his statistical approach does so — it is the same as that of Jencks, and explains individual differences in achievement. It is this mismatch between Coleman's formulation of the between-race policy objective and his statistical analysis of within-race variation that is responsible for the confusion over the Report. To be fair, however, Coleman and his colleagues never claim that they are explaining between-race differences. Readers, not the authors, leap from within-race conclusions to between-race conclusions.

Value-Laden Assumptions

The impropriety of generalizing from within-race to between-race explanations is evident from a dissection of the value-relevant assumptions of the two mathematical frameworks (See Miller, 1980, for a longer discussion). Briefly, in defining what is to be explained, the within-race formulation makes no distinction between variation in achievement that is independent of social background (and likely to result from merit) and variation in achievement that is associated with race (and likely to result from discrimination). Indeed, in order to find the best predictors of individual achievement, rigorous analyses of individual differences generally focus on within-status variation and ask schools to explain all differences that are left after statistical adjustments that eliminate (control for) differences due to race, region and home background. Schools account for very little of the variation in achievement that is independent of demographic characteristics, which is to be expected, since the bulk of it lies among family members and individuals who go to the

same schools (Mosteller and Moynihan, 1972, pp. 17-18).

In the between-race analysis, by contrast, school differences are asked to explain only the roughly one standard deviation of achievement that lies between the races, because this is assumed to be the result of discrimination and disadvantages other than differences in innate talent. Since variation in measurable school inputs other than facilities is substantial between the races and is related to achievement, schools explain a considerable portion of $\bar{A}_w - \bar{A}_b$ gap, which is, in turn, only a portion of σ_i^2.

A second value-relevant feature of within-status analysis is that all explanations of achievement differences by school characteristics that are correlated with race and class are assumed to be spurious. Coleman (1966, p. 311) says:

> When achievement differs as much as it does between these groups, then to analyze the groups together, without controlling for race or ethnicity of the student, would cause any school characteristics highly associated with race or ethnicity to show a spurious relation to achievement.

In effect, confounded variation is attributed to racial causes, rather than to schools. A similar assumption justifies the control for home background. Thus the Coleman analysis fails to address questions of whether discrimination in the distribution of school resources is responsible for the low achievement of disadvantaged students (Smith, 1972, pp. 239-40). Rather, the discrimination hypothesis is ruled out by assumption, which is suprising, given that the study was commissioned to assess "the lack of availability of equal educational opportunities for individuals by reason of race, color, religion or national origin" (Harvard Educational Review, 1969, p.3).

In contrast to the within-race model, a between-race or between-status

study of achievement uses the distribution of school inputs by race and class to explain between-status achievement gaps. Various versions of the between-status approach appear in the literature (Jencks , 1979; Duncan, 1968; Bowles, 1973; McPartland and Spree, 1973, Mayeske, 1970; Blau and Duncan, 1967). Basically these studies attribute the relationship between race (or status) and achievement to other variables that are associated with both. Moreover, the version of the method that is responsible for Table I (and Table III below) follows Coleman's (1972, pp. 153-5) original design and uses regression coefficients for school variables that are estimated with controls for race, class and region. Thus all the tables employ regression coefficients that are adjusted for individual background variables. To repeat what we said earlier, the difference between the findings of the mathematical frameworks is not due to regression coefficients.

In our exploration of normative assumptions and model features we have stressed underlying statistical factors that are the same for both Tables I and II. What statistical features (and corresponding value-relevant assumptions) cause the different answers to the within- and between-race questions? The key to the different answers is the weights applied to the controlled regression coefficients to establish their importance as explanations of achievement. The between-race analysis weights each school variable regression coefficient with the between-race difference in school resources ($\bar{S}_w - \bar{S}_b$) to estimate the importance of the variable in explaining between-race achievement differences. The within-race study weights each school variable regression coefficient with some measure of within-status variation in the school variables (Coleman, 1972, pp. 159-60) to estimate the importance of the variable in explaining individual differences. As a result of the different weights, the rank order of variables by policy importance in a between-race study tends to follow the rank order of

correlations between the school characteristics and race, while just the opposite tends to occur in within-race studies. In other words, the between-race study is designed to measure the importance of various indicators of discrimination, while the within-race study assumes that relationships between indicators of discrimination and achievement are spurious.

Detailed Findings from a Between-race Model

Table III, constructed from equations produced by Smith (1972, pp. 331-8) from the Coleman data, allows a more complete exploration of the explanations of between-race differences in achievement.

TABLE III HERE

Table III (second page) tells us first and foremost that environmental variables can explain black-white differences in scholastic achievement. In the sixth grade, where schools are still relatively homogeneous, we find that the average white would lose over half his advantage over the average black if he went to the average black school. If the average white also lost his home environment advantages (S+C), 81 percent of his achievement advantage would disappear. Clearly, the Coleman data show that environmental factors are able to explain black/white differences in achievement.

Findings also indicate that schools alone are important in explaining achievement differences between blacks and whites. In all but the white equation for 12th grade, school differences account for substantially more of the achievement inequality between the races than does home background. It follows that eliminating remaining school differences between blacks and whites would substantially reduce the black/white achievement gap, even if home environment differences persist. These findings support the prediction that integration — sending blacks and whites to the same schools — could reduce black/white differences in achievement.

Alarmingly, the table also indicates that the achievement of whites would drop roughly twice as much as the achievement of blacks would rise as a result of a swap of school environments in the early school years. While home background variables are more important for whites than for blacks, they do not insulate whites from the effects of significant changes in school quality. These findings, paralleling those of McPartland and Sprehe, suggest that a policy of redistributing existing school resources by moving whites to predominantly black schools and blacks to predominantly white schools (population sizes permitting) might hurt whites more than it would help blacks. This would, however, be an efficient way to achieve the stated goal $\overline{A}_b = \overline{A}_w$.

Despite problems of multi-collinearity, it seems useful to use the greater detail of Table III to intrepret the finding that whites are in fact more sensitive to school equalization than are blacks. Specifically, the variables that refer to race of teacher (18) and race of student (48) have large and contrasting results for blacks and whites. Effects for whites of exposure to majority-black schools are largely consistent and negative. But black reactions to majority-white schools are mixed. Where the majority-white student body has positive effects, the majority-white staff has negative effects, and vice versa.

These observations from Table III are consistent with the results of case studies of integration. In the short run, racial hostility, stereotyping and other hold-overs from segregation work against swift improvement in achievement for blacks (National Institute of Education, 1976, pp. 31-47, 90-2; Crain, 1979, p. 707). The prediction that white achievement will drop from integration into majority-black schools is also confirmed. This rarely happens, because of white parent resistance (Crain, 1979. pp. 726-7), but when it does, white students suffer (National Institute of Education, 1976. p. 49).

Overall, these data support the Brown argument that segregated schools are

inherently unequal. Both blacks and whites are predicted to do less well in majority-black schools. But for blacks, the effects of otherwise effective schools are dampened by continued discrimination. Whites, in contrast, get full benefit of effective majority-white schools, and the predicted negative effects of shifting to majority-black schools are dramatic. This suggests that the performance of the average majority-black school is substantially inferior to the performance of the average majority-white school. Thus the "inherent inequality" of segregated education does not appear to lodge in the attitudes or other cultural attributes of black students (Miller, 1980). Rather, the predicted drop in the achievement of white students upon exposure to majority-black schools suggests strongly that the inequality is the relatively low productivity of the average majority-black school.

Impacts

The Coleman Report had enormous influence (Moynihan, 1969, p. 195). First, it convinced many well-informed educators that families were more important than schools in producing achievement. Seymour Lipset is quoted as saying to Patrick Moynihan "Guess what Coleman's found?....Schools make no difference, families make the difference" (Hodgson, p. 35). As a result of the Report, policy instruments and explanations for black-white differences in achievement were sought outside the schools, for example in theories of cultural deprivation (National Institute of Education, 1976, pp. 26-7).

Genetic explanations for black/white differences were also advanced. Arthur Jensen (1972, p. 10) notes that he became interested in genetic rather than environmental explanations of racial differences in intelligence after reading the Coleman Report.

> (The Report) presents massive evidence that discrepancies in educational achievement by different social class and racial groups

are correlated to only a slight degree with inequalities in those variables over which schools traditionally have control. The data made it abundantly clear that biological and social environmental factors associated with social class, race and family background accounted for most of the variance in intellectual ability and scholastic performance.

Collins (1978, pp. 172-3) talks about the effects of the Report on the movement toward school integration.

> (T)he report stressed two main points. First, the single greatest determinant of a child's academic performance is family background. And, second, if a minority pupil from a home lacking educational strength studies with schoolmates who have strong educational backgrounds, the minority child's achievement will improve — without effecting a negative response in the performance of other children. Thus increasing contact between white and minority students, from a purely educational viewpoint, was not a zero-sum game....The publication of the Coleman Report in 1966 gave fresh impetus to the desegregation drive, which had been stymied by years of southern intransigence. In particular, civil rights groups seized on Coleman's second point in advocating integration through the busing of school children. As a result, the Coleman Report strongly influenced the issuance of the federal busing order of 1970 and was persuasive in subsequent litigation.

But the findings from Coleman's within-race analysis of individual differences in achievement cannot be generalized to explain between-race and between-status differences in achievement. The influencial interpretations of the Report go beyond its assertions and are largely unsupported. In contrast with the impacts

noted above, a between-race analysis of the Coleman data (Table III) supports the following major conclusions:

*Environmental factors can and do explain white achievement advantages over blacks;

*School factors explain more of the black/white achievement gap than home background factors;

*In the short-run, the achievement of whites who are sent to majority-black schools is expected to drop;

*In the short-run, integration will have only a modest, positive effect on black achievement;

*In general, involuntary school segregation is "inherently unequal" in that segregated majority-black schools are less effective than majority-white schools.

Peer Review

The counter-intutitive results of the Coleman Report stirred controversy, and the data were thoroughly reanalyzed (Mosteller and Moynihan, 1972, McPartland and Sprehe, 1973; Averch, 1972; Jencks, 1972; Mayeske, 1970; Harvard Educational Review, 1969). One analysis (Averch, 1972) promised to assess the internal and external validity of studies of school effects, including Coleman's, asking "Did the researcher use methods appropriate to the problem he addressed?"(p. vii) and "Were results credible in the light of accumulated knowledge?" (p. v). Given the existence of a well-established methodology for studying between-race differences (Blau and Duncan, 1967; Duncan, 1968; Sewell, Hauser, and Featherman, 1976), the inclusion of between-race studies among the reanalyses (Mayeske, 1970; McPartland and Sprehe), and Coleman's original plan to execute a between-race study (Coleman, 1972, pp. 153-5), peer review should have identified problems of external and internal validity. Instead, the

mismatch between the implied policy research question (how do we explain black/white average differences in achievement) and the actual statistical question (how do we explain individual differences in achievement) went largely unchallenged.

Thus, peer review did not convincingly reveal and correct the failure to match the client's policy question and the researcher's statistical question. Indeed, Aaron (1978, pp. 74-5) concludes that the reanalyses, especially those of Averch (1972) and Jencks (1972), added to the devaluation of public school effectiveness that was initated by Coleman's Report. In general, well-informed individuals continue to believe that research shows that family and other non-school advantages, independent of schooling, are largely responsible for the superior educational achievement of whites and upper class children.

General acceptance of findings based on application of an inappropriate mathematical/normative framework, despite exhaustive peer review, is an embarrassment to social scientists. Strauch (1976) is right to argue that we need to develop professional norms for assessing the match between statistical articulations and policy issues. To the degree that quantitative analyses do not address implied theoretical and value questions, social science contributes to a loss of understanding about social dynamics.

Toward a Normative Dynamic Model of Integration

Because between-race studies address questions related to integration, they are more informative than within-race studies, which do not. But, ironically, between-race studies produce inaccurate predictions about the long term effects of integration, while the non-responsive within-race approach happens to make fairly reasonable long-term predictions. Actual case studies of integration show that white achievement is largely unaffected by integration while black achievement is raised modestly over time (Crain, 1979, p. 707). This outcome is

consistent with within-race findings, but is out of line with the between-race predictions that white achievement will drop faster, with school equalization, than black achievement will rise.

To be useful in policy analyses, the simplistic between-race normative model we have used so far must be modified. First, we must add explicit constraints that reflect resource limitations and other commitments. A key constraint in school equalization is holding advantaged students "harmless", that is assuring no deterioration in their schooling. It is the operation of this constraint that invalidates the predictions from the simple between-race model. White achievement would decline if whites were exposed to school conditions faced by the average black, but political constraints do not allow this to happen. The simple model provides a good research explanation of the black/white difference in achievement, but a poor policy simulation.

Secondly, regression coefficients that relate achievement to merit, institutional variables, and background characteristics must be modified in the statement of the reform objective. Integration is meant to foster equal opportunity — that is, to alter the rules of the game that govern attainment. These rules, in turn, are captured by regression coefficients. For example, reflections of segregation are seen in the findings of Table III, which indicate that regression coefficients are lower or mixed for blacks. Specifically, $p_{as.c} < q_{as.c}$ (school multipliers are smaller for blacks), and $p_{ac.s} < q_{ac.s}$ (home background multipliers are smaller for blacks). Also, other research (National Institute of Education, 1976, pp. 56-7, 86-94, 151-6, Heyns, 1976; Jensen, 1969; Miller, 1980) implies $p_{am} < q_{am}$ (multipliers of individual merit are smaller for blacks).

If regression coefficients reflect segregation and are targets of reform, then an analysis that treats them as if they were empirical laws makes the

conservative assumption that caste and class biases cannot be altered. Thus a normative, dynamic model of integration must include the expectation that regression coefficients as well as school inputs will be equalized.

In the brief sections that follow, we explicitly modify the between-race reform objective to reflect constraints and expected changes in the rules governing "who gets what" in the attainment process. We also illustrate possible applications of the normative model.

Political Constraints

The symbolic language of reform implies pure equity objectives, for example $\bar{S}_b = \bar{S}_w$ and $\bar{A}_b = \bar{A}_w$, but in the specifics of legislation and in implementation, equity objectives are often swamped by concessions to affluent interests and by resource constraints (Edelman, 1971, 1977). An effective constraint in school reform has been $\bar{S}_{w,t+n} \geq \bar{S}_{w,t}$ — that is, whites must not be hurt by the reform, even if this slows equalization. Operation of this constraint causes a departure from efficient realization of Min $(\bar{A}_w - \bar{A}_b)$. Looking back at Tables I and III we see that the equity goal could be accomplished most swiftly by sending whites to majority-black schools, within the limits of numbers. This would lower white achievment, raise black achievement, and require minimum commitment of new resources to education.

As a practical matter, reforms to Min $(\bar{A}_w - \bar{A}_b)$ are not achieved through redistribution of existing school resources. Rather, in both school finance reform and in school integration, advantaged children are usually held-harmless and new resources are dedicated to disadvantaged children. Indeed, studies of the politics of educational reform tell us that it is generally necessary to put together a benefit package so that representatives of advantaged students have some incentive to go along with the "reform" (Garms, Guthrie, and Pierce, 1978, pp. 356-7; Odden, 1978, p. 146). But achieving equalization by committing new

resources is inefficient — it takes more time and money than are required to meet the objective. Indeed, if political realities indicate that advantaged students must gain as a result of "reforms" to help the needy, the operational political constraint may be $\bar{S}_{b,t+n}/\bar{S}_{w,t+n} = \bar{S}_{b,t}/\bar{S}_{w,t}$ — that is no equalization of school resources. Moreover, operation of this constraint implies substantial growth of the public sector if the "reform" is pursued.

Limits involving money, commitments to professional interest groups, and other factors also constrain achievement of equity goals. Because many of these factors can be anticipated at the time a reform is mandated, policy analysts should lay out an expected time-table for progress toward school equalization and reductions in the black/white achievement gap. If constraints reduce school equalization and equity effects to insignificance, it is misleading to justify increases in school expenditures in terms of "equal opportunity" or as changes that will help blacks achieve parity with whites. Rather, expenditures should be justified as increases in education for all children or as benefits for school professionals.

Rules Governing "Who Gets What"

Historically, discrimination kept most blacks in second class occupations, regardless of individual merit, talent, and contribution to the economy. Thus, whites were differentiated according to their potential for society-wide leadership, while blacks were prepared for leadership within the oppressed black caste. One result was that white educational achievement ran from very low to very high while most blacks were bunched together at low to moderate levels (Jensen, 1972. p. 161).

If we assume an equal distribution of genetic ability between the races, an end to caste discrimination requires equal differentiation among blacks and whites according to their talent (Thurow, 1972). High ability blacks must

achieve leadership at the same rates as equally able whites. These expectations about changes in the rules of the game that accompany desegregation must be incorporated in our statement of the reform objectives of school integration. In addition to Min($\bar{S}_w - \bar{S}_b$) we must Min (q - p). If these coefficients continue to be lower or more mixed for blacks as compared to whites, $\bar{A}_b = \bar{A}_w$ cannot be achieved despite $\bar{S}_b = \bar{S}_w$ and $\bar{C}_b = \bar{C}_w$.

More specifically, white expectations for and commitment to the achievement of blacks in integrated schools must go up so that exposure to good majority-white schools has at least the same favorable effects on blacks as it does on whites (National Institue of Education, 1976, pp 79-110) — that is, $p_{as} \geq q_{as}$ for indicators of school quality. Also, successful black parents should have at least the same ability to boost the educational achievement of their children as successful whites parents — that is, $p_{ac} \geq q_{ac}$ (Jencks (1979, pp. 192-212, indicates that this is one area which has shown substantial improvement over time). Finally, and most importantly, individual blacks who have the same innate ability as whites must be rewarded with at least equal levels of achievement — that is $p_{am} \geq q_{am}$.

Our graphic statement of the long term objective of integration, $\bar{A}_b = \bar{A}_w$, can now be elaborated to include equalization of regression coefficients as well as inputs over time.

FIGURE IV ABOUT HERE

The problem statement in Figure IV states that genetically equal individuals attain different levels, depending on their race. There are two causes. First there is a lack of differentiation among blacks by talent. Relatively speaking, the most talented blacks are most deprived by under-recognition — that is the multiplier for talent is smaller for blacks than for whites. Failure to cultivate talent greatly depresses average black achievement. The second cause

is reflected in the differences between the intercepts of the two regression lines. This difference indicates input discrimination that depresses black attainment (see Duncan, 1968; or Jencks, 1979, pp 209-12, for methods and relevant findings).

The reform statement requires both input and regression coefficient equalization to achieve $\bar{A}_b = \bar{A}_w$ in t+n. For example, based on the findings of Tables I and III, we might expect the intercept of the black equation to rise as a result of school input equalization. Equality of other inputs, including the effects of home background, would also contribute to equalization of achievement (Heyns, 1976). Finally, low slopes, indicating lesser rewards for assets (inputs) for blacks, would have to be raised to achieve $\bar{A}_b = \bar{A}_w$.

Applying the Model

A normative, dynamic model for integration should be useful in policy analysis, program evaluation, implementation and basic research on political change. The data driving the model should be longitudinal, so that questions about unequal development of equally talented blacks and whites ($p_{am} < q_{am}$) can be addressed empirically. Disadvantaged students do fall further behind advantaged students over time in schools, and initial differences are not large (Mayeske, 1970, pp. 222-4; Heyns, 1976). Likely causes include school variables (Miller, 1980).

Policy research applications of a normative model of integration include explaining the causes of black-white differences in achievement. Results in Table III suggest that findings would point primarily to school and attainment process disadvantages. Studies along these lines promise to clarify the objectives of integration and identify the most promising policy directions.

Second, policy analysis should specify expectations for reform, year by year, given constraints. Expectations would involve changes in both input

levels and regression coefficients. Constraints like holding white students harmless, or providing pay-offs for reform, ought to be taken into account along with resource limits. This would provide a realistic schedule for input equalization. Constraints that reduce expectations for changes in mobility rates, or regression coefficients, should also be specified. For example, increases in coefficients that reflect reward for merit among blacks will be depressed if schools protect affluent whites of modest talent from displacement by more talented blacks in advanced classes.

Time tables for input and mobility equalization produced by policy analysis could be used in program evaluation, and in studies of implementation and accountablility. Predicted progress could be compared to actual progress and differences would be explained. If resource and political constraints create a reform that is largely symbolic, analysts might draw attention to this fact by modeling the reform without political constraints. For example, we noted that efficient achievement of $\bar{A}_b = \bar{A}_w$ would result from redistribution of existing school resources -- say two-way busing -- which implies $\bar{A}_{w,t+1} < \bar{A}_{w,t}$, in the short run. The cost and progress toward $\bar{A}_b = \bar{A}_w$ expected under this efficient reform could be compared to the observed cost and progress of the actual, politically constrainted, reform. Public sector costs above the efficient level would be attributed to status-quo maintenance or conservatism, not to equalization. Also, maintenance of $\bar{A}_w - \bar{A}_b$ at pre-reform levels would be attributed to a lack of reform, not to failure of the disadvantaged to respond to reform.

In addition to monitoring and assessing implementation, normative, dynamic models could be used to encourage reform by suggesting performance targets. Some schools can be expected to be "ahead of their time" in achieving integration. Parameters for indicators of merit-recognition could be calculated

within these schools. Results should show more efficient use of inputs and black student assets, and would be used to target $p_{t+1} > p_t$ for less progressive schools. Also expected with equal opportunity would be $q_{am,t+1} > q_{am,t}$ — that is a rise in reward for merit among whites, which would reflect downward mobility for less-talented whites who are replaced by more-talented blacks in achievement rankings.

Finally, normative dynamic models would be useful in basic research on political change. The arguments of critics of behavioral research who say that events cannot be understood without reference to non-events are compelling. What occurs has to be compared to what might have occured, especially where reforms are meant to "equalize opportunity." Moreover, equity objectives need to be conceptualized empirically in terms of parameter changes that reflect altered rules of the game. Parameters indicating "who gets what" prior to reform are targets of reform. If they persist after reform, this in an indicator of either implementation-failure or response-failure. Models that project reform expectations in terms of both parameter and input changes can be compared with actual post-"reform" figures to tell us about progress. Continued failure to implement a promised or popular reform implies a lack of political accountablity.

Implications for Political Science

Our review of the literature on educational equity lends support to two observations. First, political scientists are not fulfilling their unique responsibility among social scientists to develop empirical theories, concepts and measures that could be used to incorporate political objectives and realities into policy analyses. Second, political abstractions, such as equity and accountability, cover more behavior possibilities than can be observed in a given locality or point in history. Empirical analyses should not ignore the

possiblity of dramatic changes involving these concepts, but rather should evaluate current behavior in terms of desired or feared developments.

More specifically, review of the interdisciplinary literature on educational equity indicates that social scientists have difficulty interpreting empirical methods and findings within appropriate political contexts. Political scientists fail to do this in their own work (Wahlke, 1979), which leaves a gap for all of social science. Thus, the otherwise sophisticated interdisciplinary literature on educational opportunity suffers from failures to deal explicitly and precisely with political theories, goals, and realities. More seriously, peer review does not assure proper matching of values to statistical frameworks.

While supporting Past-president Wahlke's (1979) excellent analysis of Political Science's failure to place studies of individuals in appropriate theoretical and institutional contexts, we have explored an opportunity for political science that differs from his recommendation to study pre-programed, genetically-determined individual behavior. In addition to building up political theory from biology and knowledge of basic human drives, we recommend a top-down, partially empirical approach that focuses on the concept of accountability.

Critics note that we cannot understand political outcomes unless we assess political events that do not occur as well as those that do occur (Bachrach and Baretz, 1962; 1963; [illegible] 1975). They also state that much of the existing literature endorses established institutions in the guise of explaining them (Walker, 1966; Bachrach, 1967), and that the responses of the political system to ordinary and humble citizens are largely symbolic (Edelman, 1971; 1977). Reacting to these criticisms, some behaviorally oriented political scientists have countered that to be quantitative, rigorous and objective, research must be confined to actual events or to assessment of the truth of political ideas

(Merelman, 1968; Wolfinger, 1971; Connolly, 1979).

But human beings can imagine new social relations that are not yet true and may never be true, and groups that want such changes often turn to political institutions, as do other groups who want to preserve advantages. To be understood, behavioral outcomes must be viewed in the context of reformers' visions and symbolic promises. Social reality seems to differ from physical reality. It is a function of what is wanted, as well as of what is. Certainly, the concept of political accountability involves a comparison of action that should occur to action that does occur.

From this perspective, we recommend that normative, dynamic, models be used to quantify moral visions, foreign experiences, and other empirically-referenced political theories. Such models would have use in basic as well as applied research, and would forecast intended changes in the distribution of resources and in attainment processes for comparison with observed events. Comparisons of the normative expectations of various interests to actual events can be used to identify political winners, independent of symbolic statements about political outcomes. Where political constraints negate the stated policy, lack of political accountability can be identified. Growth of the public sector due to actions which maintain established advantages and undercut stated equity objectives can be properly attributed to conservatism, rather than to reform. Finally, empirical research can be freed from conservative bias, which results from dependence on observed relationships.

A decade ago construction of dynamic models would have been beyond the methodological capabilities of most political scientists, but this is changing. Political studies, especially of elections, are becoming dynamic, if not normative. The dominant theoretical paradigm, V.O. Key's theory of critical elections, is clearly dynamic (Uslander, 1978), and contemporary analyses of

elections often focus on changes in patterns of party support and participation over time. A general paradigm, which views politics over time in terms of both incremental and drastic changes has been proposed (Shulman, 1975), and sophisticated methods to compare predictions to actual events are being developed (Hildebrand, Laing and Rosenthal, 1976).

Indeed, development of dynamic empirical theory not only provides the methdological basis for dynamic normative theory, but also a compelling argument for it. Empirical, historical, studies are beginning to document major changes in what appeared to be relatively stable social, economic and political relations. Political scientists may eventually explain the critical political events that establish the rules for "who gets what." Explanations are likely to include discrepancies between static-state political outcomes and demands for reform. Because today's discrepancies between expectations and actions are likely to be tomorrow's explanations, it is desirable to measure existing discrepancies using normative models.

Footnotes

1. The percentage of the achievement gap that is explained is calculated by dividing standardized achievement changes in the table by the difference between black/white means in the appropriate region and grade, after standardizing that difference by dividing it by the standard deviation of achievement within the group for which the equation was estimated. The mean and variance figures for achievement are from Coleman's (1966) statistical appendix.

TABLE 1

Inequalities Due to Race

Subgroups quation used	School resources assigned	Change in expected achievement due to reassignment of: Facilities	Teachers	Student body	Total school resources
White South	BS				
6		-.01	-.59	-.01	-.61
9		.00	-.70	-.08	-.79
12		.01	-.13	-.12	-.25
Average of 3 grades		.00	-.47	-.07	-.55
White North	BN				
6		-.04	-.29	-.10	-.43
9		.00	-.30	-.11	-.40
12		.03	-.13	-.08	-.18
Average of 3 grades		.00	-.24	-.10	-.34
Black South	WS				
6		-.02	.18	.09	.25
9		-.03	.14	.18	.29
12		.00	.16	.17	.33
Average of 3 grades		-.02	.16	.15	.29
Black North	WN				
6		.02	.04	.13	.19
9		.06	.02	.11	.19
12		.00	.10	.15	.25
Average of 3 grades		.03	.05	.13	.21

Source: McPartland and Sprehe (1973, p. 326), a reanalysis of data from Coleman (1966).

TABLE 2

Unique contributions to variance in verbal achievement (scaled up to sum to R^2 in each regression) as measures of the importance of each of four clusters of variables: family background (6 variables), school facilities and curriculum (11 variables), teacher characteristics (7 variables), and student-body characteristics (5 variables), Blacks and whites in North and South, grades 12, 9, 6.

	Black North	Black South	White North	White South
Grade 12				
Family	.067	.119	.133	.144
Facilities & curriculum	.018	.009	.014	.007
Teacher	.016	.026	.009	.002
Student body	.046	.078	.008	.013
R^2	.140	.232	.165	.166
Grade 9				
Family	.065	.098	.160	.183
Facilities & curriculum	.017	.046	.010	.004
Teacher	.012	.014	.010	.010
Student body	.027	.053	.006	.005
R^2	.121	.211	.186	.203
Grade 6				
Family	.086	.137	.135	.179
Facilities & curriculum	.002	.033	.004	.003
Teacher	.024	.023	.007	.011
Student body	.021	.021	.017	.006
R^2	.132	.213	.163	.199

Source: Coleman (1972, p. 160), a reanalysis of data from Coleman (1966).

TABLE III

PREDICTED CHANGES IN STANDARD UNITS OF ACHIEVEMENT FOR BLACKS AND WHITES IN THE NORTH THAT WOULD RESULT FROM EXPOSURE TO THE AVERAGE SCHOOL AND HOME CONDITIONS OF MEMBERS OF THE OTHER RACE*

		Sixth-Grade		Ninth-Grade		Twelfth-Grade	
No.	VARIABLE NAME	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE
	FAMILY BACKGROUND FACTOR						
3	Reading Material	+.052	-.077	+.031	-.054	+.016	-.085
4	Items in Home	+.075	-.072	+.025	-.035	+.010	+.000
5	Siblings	+.033	-.058	+.080	-.110	+.058	-.078
6	Structure for Integrity	+.026	-.036	+.037	-.063	+.020	-.021
39	Parents' Educ.	+.032	-.063	+.028	-.071	+.049	-.066
40	Urbanism	+.000	+.002	-.011	+.019	-.008	+.002
	TOTAL C	+.217	-.304	+191	-.313	+.144	-.248
	FACILITIES & CURRICULUM FACTOR						
38	Per-Pupil Expenditure	+.001	-.000	-.001	+.007	-.000	+.002
23	Volume/Student	+.004	+.002	-.001	-.003	-.007	+.006
22	Science Lab			+.001	-.002	-.002	-.009
24	Extracurr. Activity			-.002	+.000	+.001	+.001
36	Accelerated Curr.	+.004	+.000	+.011	+.000	+.007	-.018
25	Comprehensive Curr.			-.008	+.010	-.001	+.001
35	Tracking			+.005	+.001	+.003	+.000
27	Movement between Tracks			+.002	+.001	-.002	-.001
9	School Size	+.002	+.002	-.001	+.003	+.016	-.011
30	Guidance Counselor			+.004	-.005	-.009	+.031
33	School Location	+.021	-.034	+.006	+.000	-.025	+.033
37	Promotion Slow Student	+.001	-.001				
	TOTAL S_1	+.033	-.030	+.017	+.013	-.018	+.036
	STUDENT BODY FACTOR						
10	Encyclopedia	+.068	+.015	+.043	-.012	+.045	-.000
26	Student Transfer	-.004	+.016	+.029	-.018	+.027	-.015
31	Attendance	-.039	-.009	+.022	-.059	+.033	-.013
52	College Track			-.032	+.006	+.067	-.033
53	Homework			-.008	+.001	+.027	+.000
55	T Percept Student	+.100	-.097				
48	Proportion White	-.021	-.266	+.381	-.250	+.122	-.120
	TOTAL S_2	+.105	-.341	+.435	-.331	+.322	-.181

TABLE III - Continued

	TEACHER CHARACTERISTICS FACTOR						
11	T SES Level	-.000	-.000	+.003	+.000	+.008	+.000
12	T Experience	+.003	-.004	+.016	-.004	+.003	+.013
13	T Localism	+.079	+.000	+.002	+.003	+.015	+.012
15	T Degree	+.009	-.004	-.025	-.007	+.006	-.010
16	T Preference Student	-.007	-.006	+.003	+.027	+.087	-.038
17	T Verbal	+.006	-.016	+.014	+.007	+.016	-.030
18	T Race	+.044	-.165	-.096	-.170	-.078	-.000
	TOTAL S_3	+.134	-.196	-.083	-.145	+.057	-.054

	Sixth-Grade		Ninth-Grade		Twelfth-Grade	
	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE
TOTAL CHANGE	+.489	-.871	+.560	-.776	+.505	-.447
DUE TO SCHOOL	+.272	-.567	+.369	-.463	+.361	-.198
DUE TO HOME	+.217	-.303	+.191	-.313	+.144	-.248
$\bar{A}_w - \bar{A}_b$ in Standarized Units**	1.319	1.076	1.159	1.048	1.028	1.060
% $\bar{A}_w - \bar{A}_b$ explained by schools, S***	21%	53%	32%	44%	35%	19%
% $\bar{A} - \bar{A}$ explained by S+C***	37%	81%	48%	74%	49%	42%

*Smith provides standardized regression coefficients, means and standard deviations for regression equations with verbal achievement as the dependent variable. His data are from Coleman (1966). If "B" represents a standardized regression coefficient, the above gains and losses in standard units of achievement are estimated as illustrated for blacks.

$$\hat{\bar{A}}_{b,t+n} - \bar{A}_{b,t} = \sum_{S=1}^{n} B_{b,s} \{(\bar{S}_w - \bar{S}_b) / \sqrt{\Sigma (S_b - \bar{S}_b)^2 / N}\} + \sum_{C=1}^{n} B_{b,c} \{(\bar{C}_w - \bar{C}_b) / \sqrt{\Sigma C_b - \bar{C}_b)^2 / N}\}$$

** $\bar{A}_w - \bar{A}_b$ in standardized units is the difference of average achievement for the two races standarized by the variation in achievement for that race.

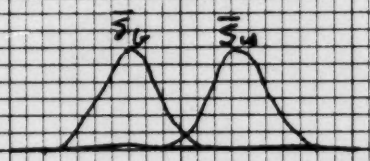
***The percent of $\bar{A}_w - \bar{A}_b$ explained is the sum of changes in standardized units over the achievement gap in standardized units.

Figures do not add precisely to the totals because of rounding. Totals are correct.

Source: An original reanalysis of data from Coleman (1966), based on equations from Smith (1972, pp. 331-8).

FIGURE I

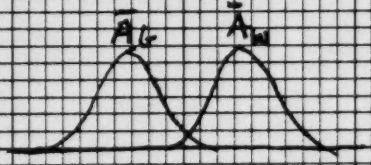
Social Problem (L)



Reform objective (L+n)

FIGURE II

Social Problem (L)



Reform objective (L+n)

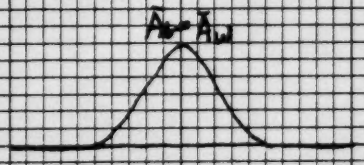
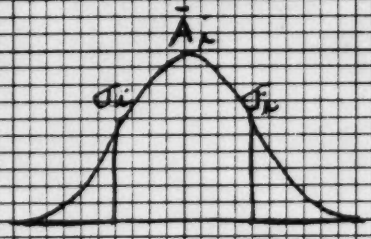
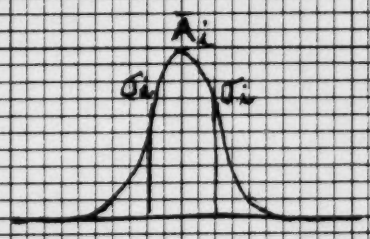


FIGURE III

Social Problem (L)

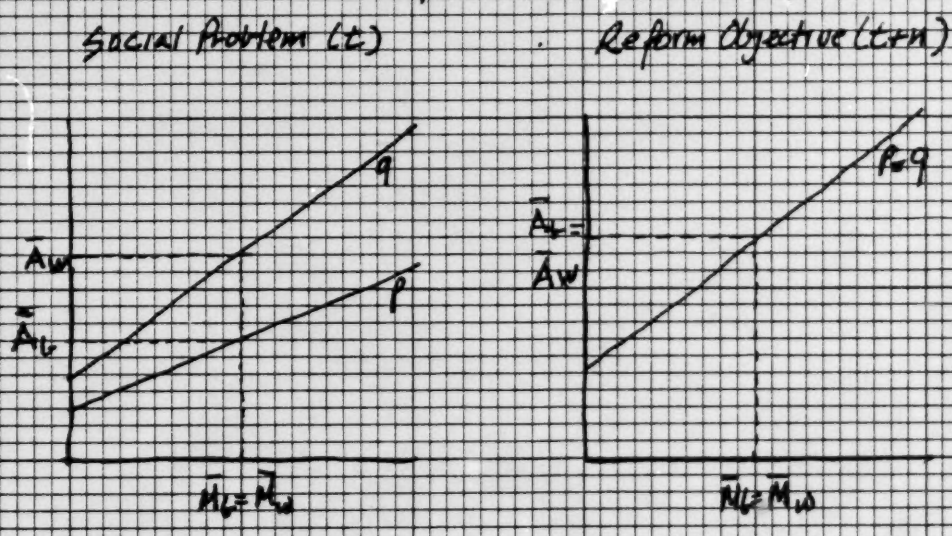


Reform objective (L+n)



FILMS 10 X 10 TO 1 INCH
10TH LINE HEAVY

FIGURE IV



FP1 MF- 10 X 10 TO 1 INCH
10TH LINE HEAVY

References

AARON, Henry J. (1978). Politics and the Professors: The Great Society in Perspective. Washington, D.C.: The Brookings Institution.

AVERCH, Harvey A. et al (1972). How Effective is Schooling? A Critical Review and Synthesis of Research Findings. Santa Monica, CA: Rand.

BACHRACH, Peter (1967). The Theory of Democratic Elitism: A Critique. Boston: Little Brown and Company.

_____ and Morton S. Baretz (1962). "Two Faces of Power." American Political Science Review 56: 947-52.

_____ (1963). "Decisions and Non-Decisions: An Analytic Framework." American Political Science Review 57:632-42.

_____ (1975). "Power and Its Two Faces Revisited: A Reply to Geoffrey Debnam." American Political Science Review 69: 900-4.

BLAU, Peter and Otis Dudley Duncan (1967). The American Occupational Structure. New York: Wiley.

BOWLES, Samuel (1973). "Understanding Unequal Economic Opportunity." American Economic Review 63: 346-56.

COLEMAN, James S. (1966). Equality of Educational Opportunity. Washington, D.C.: US Government Printing Office.

_____ (1972). "The Evaluation of Equality of Educational Opportunity." In Frederick Mosteller and Daniel P. Moynihan, eds., On Equality of Educational Opportunity. New York: Vintage Books.

CONNOLLY, William E. (1979). Review of Edelman (1977) in American Political Science Review 73: 847.

COLLINS, Sharon, M. (1978). "The Use of Social Research in the Courts." In Laurence E. Lynn, Jr., ed., Knowledge and Policy: The Uncertain Connection. Washington, D.C.: National Academy of Sciences.

CRAIN, Robert L. and Rita E. Mahard (1979). "Desegregation and Black Achievement: A Review of the Research." In Robert H. Haveman and B. Bruce Zeller, eds., Policy Studies Review Annual: Volume 3. Beverly Hills, CA: Sage.

DUNCAN, Otis D. (1968). "Inheritance of Poverty or Inheritance of Race." in Daniel P. Moynihan, ed., On Understanding Poverty. New York: Basic Books.

EDELMAN, Murray (1971). Politics as Symbolic Action. Chicago, Markham.

_____ (1977). Political Language: Words that Succeed and Policies That Fail. New York: Academic Press.

FEATHERMAN, David L. and Robert M. Hauser (1978). Opportunity and Change. New

York: Academic Press.

GARMS, Walter I., James W. Guthrie, and Lawrence C. Pierce (1978). School Finance: The Economics and Politics of Public Education. Englewood Cliffs, N.J.: Prentice-Hall.

HARVARD EDUCATIONAL REVIEW, EDS. (1969). Equal Educational Opportunity. Cambridge, Mass: Harvard University Press.

HEYNS, Barbara (1976). Exposure and the Effects of Schooling. Berkeley, CA: The University of California at Berkeley.

HILDEBRAND, David K., James D. Liang, and Howard Rosenthal (1976). " Prediction Analysis in Political Research." American Political Science Review 70: 509-35.

HODGSON, Godfrey (1973). "Do Schools Make a Difference?" The Atlantic: 35-46.

JENCKS, Christopher S. (1972). Inequality: A Reassessment of the Effect of Family and Schooling In America. New York: Basic Books.

_____ (1979). Who Gets Ahead? The Determinants of Economic Success in America. New York: Basic Books.

JENSEN, Arthur R. (1968). "The Culturally Disadvantaged and the Heredity-Environment Uncertainty." In Jerome Hellmuth, ed., Disadvantaged, Child Volume 2. New York: Brunner/Mazel, Inc.

_____ (1972). Genetics and Education. New York: Harper and Row.

MAYESKE, George (1970). A Study of Our Nation's Schools: A Working Paper. Washington, D.C.: US Government Printing Office.

McPARTLAND. James and J. Timothy Sprehe (1973). "Racial and Regional Inequalities in School Resources Relative to Their Educational Outcomes." Social Science Research 2:321-32.

MEEHAN, Eugene J. (1973). "Science, Values and Politics." American Behavioral Scientist 17:53-100.

MERELMAN, Richard M. (1968). "On the Neo-Elitist Critique of Community Power." American Political Science Review 62: 451-60.

MILLER, Trudi C. (1980). "Articulate Statistics and Educational Equity" Policy Sciences (Forthcoming).

MOSTELLER, Frederick and Daniel P. Moynihan (1972). On Equality of Educational Opportunity. New York: Vintage Books.

MOYNIHAN, Daniel P. (1969). Maximum Feasible Misunderstanding. New York: The Free Press.

NATIONAL INSTITUTE OF EDUCATION (1976). The Desegregation Literature: A Critical Appraisal. Washington, D.C.: US Department of Health, Education and Welfare.

ODDEN, Allan (1978). "Public Policy Issues in School Finance Reform." In State and Local Government Finance and Financial Management: A Compendium of Current Research. Washington, D.C.: Government Finance Research Center, Municipal Finance Officers Association.

SEWELL, William H., Robert M. Hauser and David L. Featherman (1976). Schooling and Achievement in American Society. New York: Academic Press.

SHULMAN, Paul R. (1975). "Non-Incremental Policy Making: Notes toward an Alternative Paradigm." American Political Science Reveiw 69: 1354-70.

SMITH, Marshall S. (1972). "Equality of Educational Opportunity: The Basic Findings Reconsidered." In Frederick Mosteller and Daniel P. Moynihan, eds., On Equality of Educational Opportunity. New York: Vintage Books.

STORING, Herbert J., ed, (1962). Essays on the Scientific Study of Politics. New York: Holt, Rinehart and Winston.

STRAUCH, Ralph E. (1976). "A Critical Look at Quantitative Methodology." Policy Analysis 2:121-44.

THUROW, Lester C. (1972). "Education and Economic Equality." The Public Interest, 66-81.U.S.

USLANDER, Eric M. (1978). "Comparative State Policy Formulation, Inter-Party Competition, and Malapportionment: A New Look at V.O. Key's Hypothesis." Journal of Politics 40: 409-32.

WAHLKE John C. (1979). "Pre-Behavioralism in Political Science." American Political Science Review 73: 9-31.

WALKER, Jack L. (1966). "A Critique of the Elitist Theory of Democracy." American Politial Science Review 60: 285-95.

WOLFINGER, Raymond E. (1971). "Non-Decisions and the Study of Local Politics." American Political Science Review 65: 1063-80.